4. PROJECT CONDITIONS

The impacts of the retail development on the surrounding transportation system are discussed in this chapter. First, the methodology used to estimate the amount of traffic generated by the proposed development is described. Then, results of the level of service calculations for Project Conditions are presented. Project Conditions are defined as Background Conditions volumes plus traffic generated by the proposed project. Project impacts are then identified by comparing the level of service results under Project Conditions to those under Background Conditions.

Project impacts to the adjacent freeway segments of US 101 are evaluated and a discussion of site access, on-site circulation, and parking is included. Impacts to the pedestrian, bicycle, and transit facilities are also discussed in this chapter.

PROJECT LAND USES

The proposed retail development will contain a variety of retail businesses that may include a home improvement store, discount store, restaurants, gas station with convenience store and car wash, multi-plex movie theater, and other retail uses. It was assumed that there would be no more than two free standing discount stores included in the proposed project.

Specifically, the proposed project includes 590,100 square feet (s.f.) of retail space, a 12-position fuel station, and 63,200 s.f. of movie theater space. (It should be noted that the preliminary site plan, dated March 10, 2005, shows the fuel station as an optional use on Pad 2, and that the primary proposed use for this pad is 6,000 s.f. of retail space. However, since the 12-position fuel station would generate substantially more traffic than the planned retail space for this location, the traffic analysis is based on development of Pad 2 with a fuel station in order to present a worst-case analysis. In addition, it should be noted that the current site plan dated March 10, 2005 shows a total retail floor area (including garden center) of 588,050 s.f., assuming fuel station use for Pad 2. This is 2,050 s.f. less than the floor area used in this traffic analysis, which was based on a previous version of the site plan. Since the traffic analysis is therefore based on a project size which is approximately 0.4 percent larger than currently proposed, the resulting calculations may be slightly conservative; however, the difference is not great enough to affect the findings, conclusions, or recommendations contained in this report.)

PROJECT ROADWAY IMPROVEMENTS

According to the preliminary site plan, the driveway on Cochrane Road would form the new north leg of the Cochrane Road/DePaul Drive intersection and provide full access (left and right-turns in and out). The site plan indicates that Mission View Drive will be extended northward and six project driveways on this street will be provided. The southernmost driveway on Mission View Drive is assumed to be limited to right-turns in and out. Full access is assumed at the remaining five driveways.

As part of the project, the applicant proposes to signalize the Cochrane Road/DePaul Drive intersection. The addition of project traffic is estimated to cause the intersection to meet the peak-hour signal warrant from Caltrans.[1] The following lane geometry is assumed:

[1] "... it is of the utmost importance that the consideration of a signal installation and the selection of equipment be preceded by a thorough study of traffic and roadway conditions made by an engineer experienced and trained in this field. Equally important is the need

Northbound (DePaul Drive): one shared left/through lane and one right-turn lane.

Westbound (Cochrane Road): one left-turn lane, two through lanes, and one right-turn lane.

Southbound (project driveway): one shared left/through lane and two right-turn lanes with a separate overlap phase.

Eastbound (Cochrane Road): two left-turn lanes, one through lane, and one shared through/right-turn lane.

The project will also construct a portion of the extension of Mission View Drive north of Cochrane Road along the project frontage. The following lane configuration is assumed for the unsignalized intersection:

Northbound and Southbound (Mission View): one left-turn lane and one shared through/right-turn lane.

Westbound (Cochrane): one left-turn lane and one shared through/right-turn lane.

Eastbound (Cochrane): one shared left-turn/through lane and one right-turn lane.

PROJECT TRAFFIC ESTIMATES

The amount of traffic associated with a project is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In the first step, the amount of traffic entering and exiting the project site is estimated. In the second step, the directions the trips use to approach and depart the site are projected. The trips are assigned to specific street segments and intersection turning movements in the third step. The results of this process for this analysis are described in the following sections.

Trip Generation

The amount of traffic generated by a development is estimated by applying the appropriate trip generation rates, corresponding to the land use type, to the size of the development. Trip generation rates for "Shopping Center", "Gas Station with Car Wash and Convenience Market", and "Multi-Plex Movie Theater" land uses from *Trip Generation* (Institute of Transportation Engineers, 7th Edition) were used to estimate the number of trips. The shopping center rate accounts for the proposed retail and restaurant uses at the site.

A reduction of 25 percent was applied to the shopping center trips to account for pass-by and diverted link trips during the peak hours. Pass-by trips are trips to the site made by vehicles already traveling by the site on the adjacent street (i.e., these vehicles make an interim stop between their primary origin and destination). Diverted link trips are trips made by vehicles that make a detour to access the project site. For this study, diverted link trips consist of trips made by vehicles already on US 101. Pass-by and diverted link trips are included in the analysis of traffic that enters and exits the project site, but are not considered "new" trips added to the street system by the project. To reflect the lower volume of traffic on roadways during non-peak hours, a lower pass-by/diverted link reduction of 20 percent was applied to daily trips.

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for checking the efficiency of a traffic signal in operation.... The decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. Delay, congestion, approach conditions, driver confusion, future land use or other evidence of the need for right of way assignment beyond that which could be provided by stop signs must be demonstrated." (Caltrans *Traffic Manual*)

The trips associated with the gas station were also reduced to account for pass-by and diverted link trips. Based on information provided in ITE, a reduction of 40 percent was used for this land use.

Some movie theater patrons will also visit the project's retail and restaurant uses. To account for the internalization of trips within the site, a 20 percent reduction was applied to peak hour movie theater trip generation. A lower internalization reduction of 10 percent was applied to daily trips to reflect the lower volume of traffic on roadways during non-peak hours.

The project trip generation estimates are presented in Table 7. The proposed retail development is estimated to generate 22,009 net new daily trips, 533 net new AM peak-hour trips (334 inbound/199 outbound), 1,869 net new PM peak-hour trips (926 inbound/943 outbound), and 2,415 net new Saturday midday peak-hour trips (1,325 inbound/1,090 outbound).

TABLE 7

PROJECT TRIP GENERATION ESTIMATES

Item	Weekday	AM Peak Hour			PM Peak Hour			Sat Peak Hour		
	Total	In	Out	Total	In	Out	Total	In	Out	Total
Trip Rates										
Shopping Center (ksf)	36.49	0.63	0.40	1.03	1.64	1.78	3.42	2.42	2.23	4.65
Gas-Service Station (Fueling Position)	152.84	5.43	5.21	10.64	6.67	6.67	13.33	9.44	9.07	18.50
Movie Theater (screen)	292.50	0.0	0.0	0.0	13.81	9.21	23.02	14.38	5.59	19.97
Trip Estimates										
Shopping Center (590.1 ksf)	21,530	371	237	608	970	1,050	2,020	1,427	1,317	2,744
Gas-Service Station (12 Fueling Positions)	1,834	65	63	128	80	80	160	113	109	222
Movie Theater (14 screens)	4,095	0	0	0	193	129	322	201	79	280
Gross Project Trips	*27,459*	*436*	*300*	*736*	*1,243*	*1,259*	*2,502*	*1,741*	*1,505*	*3,246*
Shopping Center Pass-by/Diverted Trip Reduction[2]	-4,306	-76	-76	-152	-253	-252	-505	-343	-643	-686
Gas-Service Station Pass-by/Diverted Trip Reduction (40%)	-734	-26	-25	-51	-32	-32	-64	-45	-44	-89
Theater Internalization[3]	-410	0	0	0	-32	-32	-64	-28	-28	-56
Net New Project Trips	**22,009**	**334**	**199**	**533**	**926**	**943**	**1,869**	**1,325**	**1,090**	**2,415**

Notes:

1 Trip rates are expressed as trips per 1,000 s.f. (ksf) or per screen.

2 Pass-by/Diverted trip reduction 20 percent daily and 25 percent during peak hour.

3 Internalization trip reduction 10 percent daily and 20 percent during peak hour.

Source: *Trip Generation* (Institute of Transportation Engineers, 7th Edition).

Trip Distribution

The trip distribution pattern for the proposed development was estimated based on existing travel patterns in the vicinity of the site and the relative locations of complementary land uses in the area. The population density in the vicinity of the project site was also assessed to determine the trip distribution. The major directions of approach and departure for the project are shown on Figure 8.

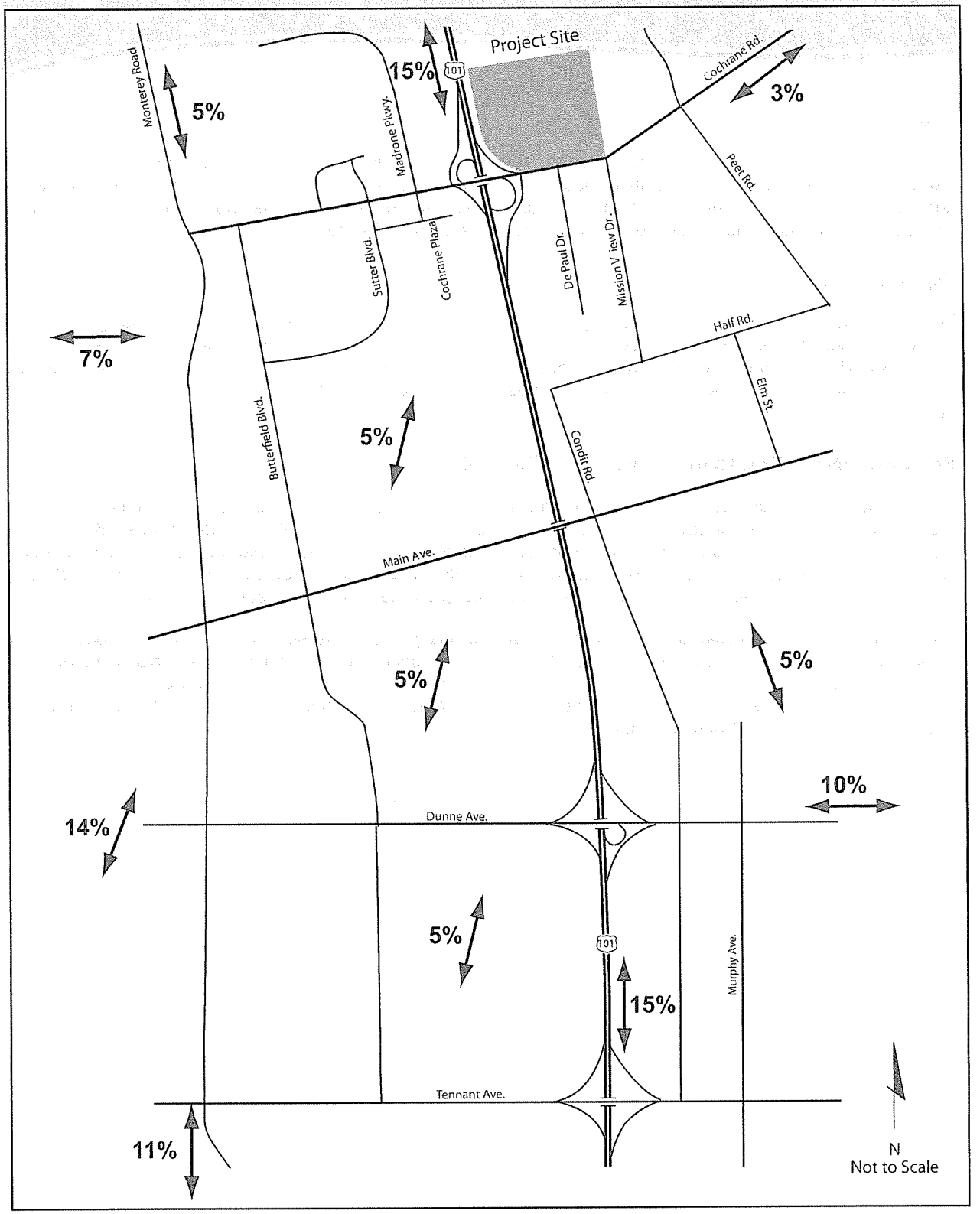
Trip Assignment

Trips generated by the proposed retail, gas station, and movie theater development were assigned to the roadway system based on the directions of approach and departure described above. The trip assignments for the AM, PM, and Saturday midday peak hours are shown on Figures 9a and 9b. Project trips were added to background traffic volumes to estimate volumes under Project Conditions, as shown on Figures 10a and 10b.

PROJECT INTERSECTION LEVELS OF SERVICE

Level of service calculations were conducted for the study intersections to evaluate the potential impacts of the proposed retail development on the local roadway system under Project Conditions. Background Conditions serve as the base against which project impacts were evaluated. Table 8 contains the intersection level of service results. The results for Background Conditions, as well as projected increases in critical delay and critical volume-to-capacity ratios with the project, are presented for comparison purposes.

The addition of project traffic is estimated to cause the unsignalized intersection of Cochrane Road/Mission View Drive to operate at unacceptable levels of service during all peak hours under this scenario. The proposed project would exacerbate unacceptable operations at the Dunne Avenue/Monterey Road intersection during the PM peak hour. The remaining study intersections are all expected to operate at acceptable levels under Project Conditions.



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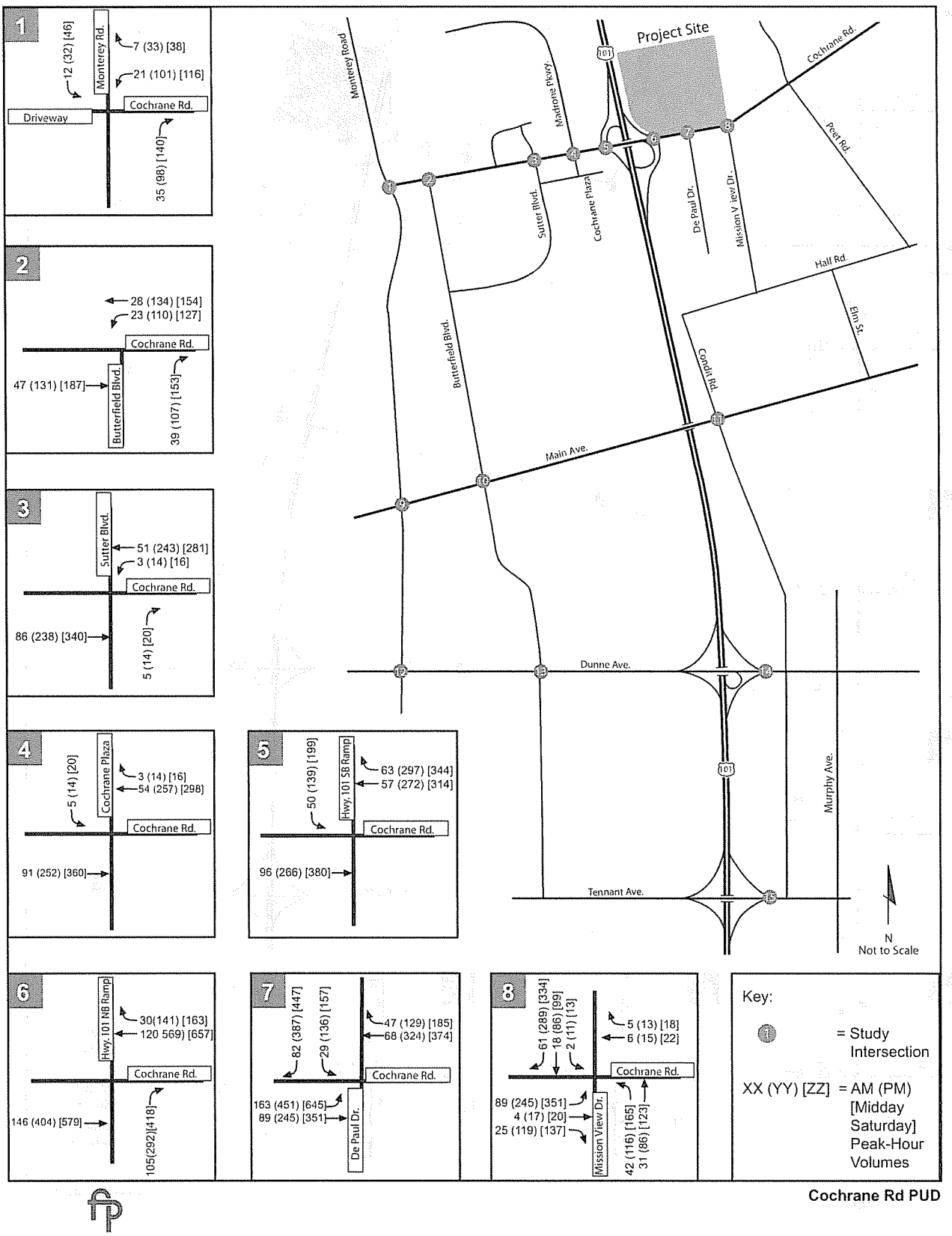
PROJECT TRIP DISTRIBUTION

Figure 8



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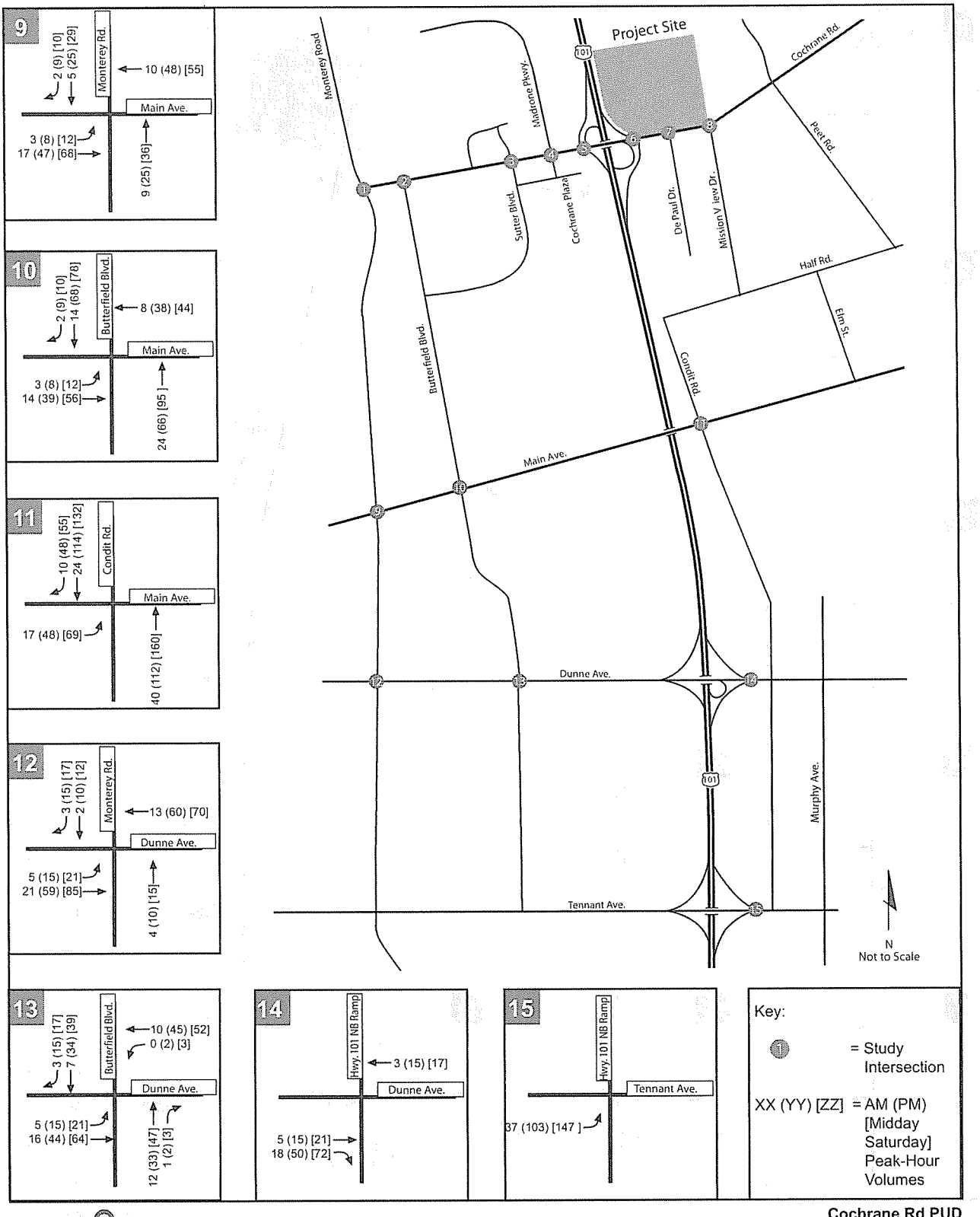
PROJECT TRIP ASSIGNMENT

Figure 9A



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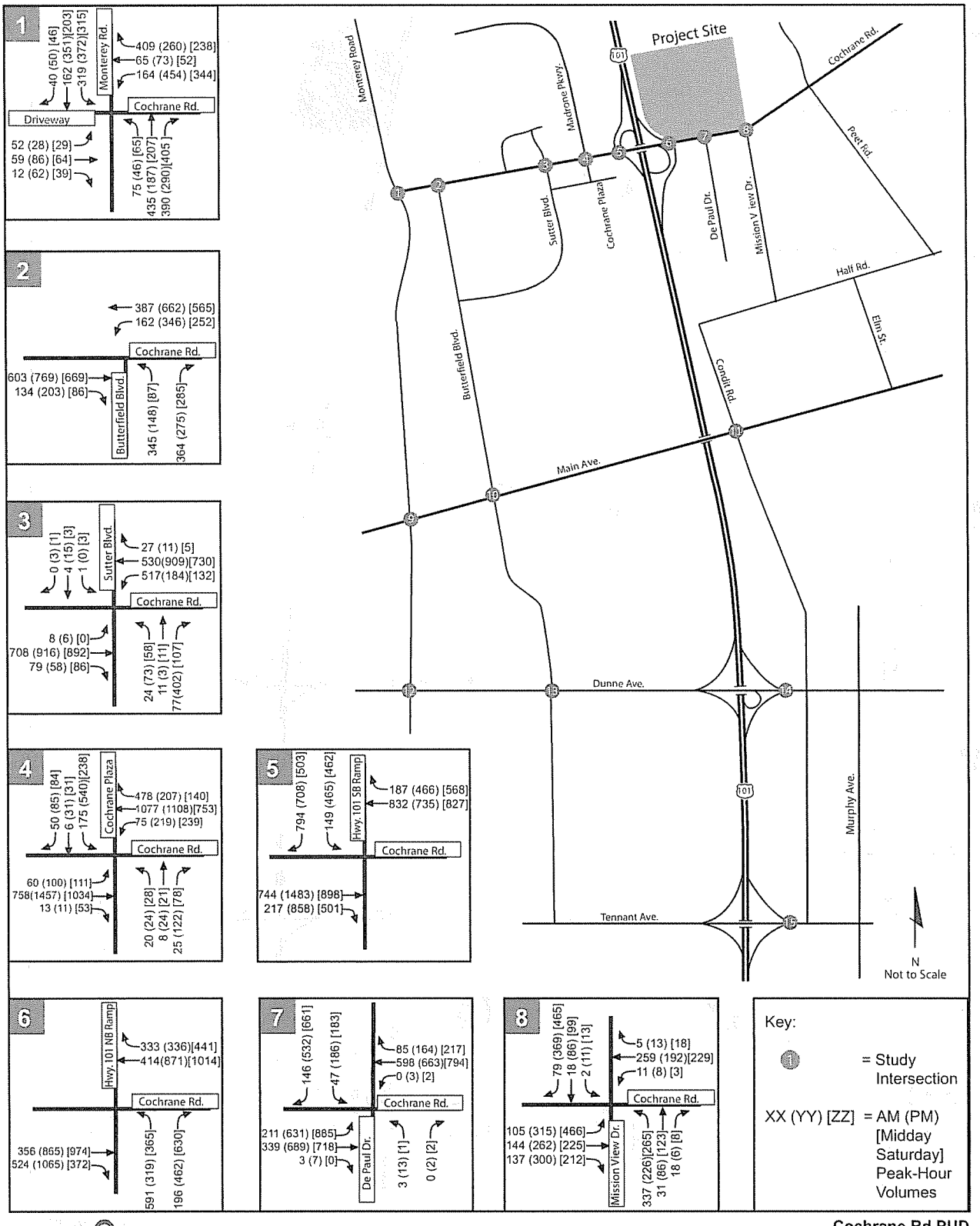
PROJECT TRIP ASSIGNMENT

Figure 9B



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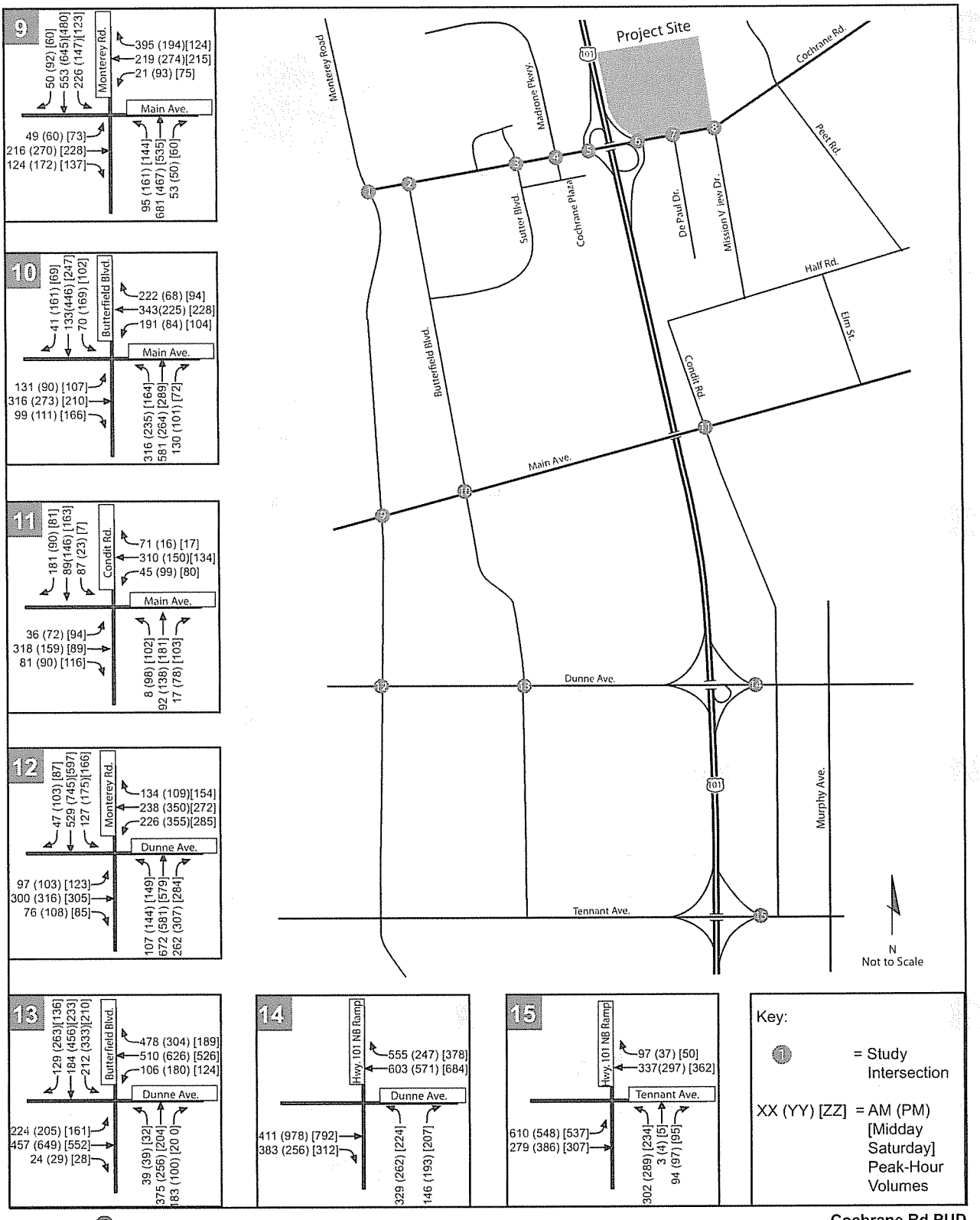
PROJECT INTERSECTION PEAK-HOUR VOLUMES

Figure 10A



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PROJECT INTERSECTION PEAK-HOUR VOLUMES

Figure 10B

TABLE 8
BACKGROUND AND PROJECT INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour[1]	Background		Project			
		Delay[2]	LOS[3]	Delay	LOS	Δ in Crit. V/C[4]	Δ in Crit. Delay[5]
1. Cochrane Road/Monterey Road	AM	20.5	C+	20.7	C+	+0.012	+0.2
	PM	25.7	C	25.4	C	+0.045	-0.1
	SAT	24.4	C	26.4	C	+0.130	+0.1
2. Cochrane Road/Butterfield Boulevard	AM	13.2	B	13.4	B	+0.030	+0.5
	PM	12.3	B	13.5	B	+0.113	+2.1
	SAT	10.9	B+	12.7	B	+0.140	+2.7
3. Cochrane Road/Sutter Boulevard	AM	20.6	C+	20.7	C+	+0.021	+0.3
	PM	15.4	B	16.3	B	+0.081	+1.0
	SAT	13.6	B	13.3	B	+0.081	-0.6
4. Cochrane Road/Cochrane Plaza	AM	18.7	B-	18.6	B-	+0.018	+0.2
	PM	28.1	C	26.8	C	+0.075	-0.5
	SAT	23.4	C	22.9	C+	+0.072	+0.2
5. Cochrane Road/SB US 101 Ramp	AM	13.3	B	14.2	B	+0.063	+0.9
	PM	14.6	B	23.6	C	+0.230	+14.7
	SAT	19.9	B-	25.7	C	+0.338	+6.7
6. Cochrane Road/NB US 101 Ramp	AM	11.3	B+	13.4	B	+0.165	+2.7
	PM	10.9	B+	25.0	C	+0.565	+16.6
	SAT	10.8	B+	63.4	E	+0.834	+66.0
7. Cochrane Road/DePaul Drive[6]	AM	12.0	B	16.2	B	NA	NA
	PM	12.6	B	22.1	C+	NA	NA
	SAT	11.2	B	27.6	C	NA	NA
8. Cochrane Road/Mission View Drive[7]	AM	16.9	C	**>100**	**F**	**NA**	**NA**
	PM	12.7	B	**>100**	**F**	**NA**	**NA**
	SAT	12.3	B	**>100**	**F**	**NA**	**NA**
9. Main Avenue/Monterey Road	AM	27.8	C	27.8	C	+0.003	+0.0
	PM	24.3	C	24.7	C	+0.040	+0.8
	SAT	22.0	C+	22.5	C+	+0.052	+0.9
10. Main Avenue/Butterfield Boulevard	AM	38.2	D+	38.4	D+	+0.012	+0.4
	PM	37.5	D+	37.6	D+	+0.043	+0.5
	SAT	31.9	C	32.2	C-	+0.058	+0.9
11. Main Avenue/Condit Road	AM	12.3	B	12.8	B	+0.022	+0.5
	PM	9.8	A	11.4	B+	+0.088	+2.3
	SAT	9.9	A	11.2	B+	+0.099	+1.8
12. Dunne Avenue/Monterey Road	AM	37.9	D+	38.2	D+	+0.012	+0.6
	PM	39.5	D	**40.7**	**D**	**+0.043**	**-0.4**
	SAT	30.9	C	31.9	C	+0.056	+0.9
13. Dunne Avenue/Butterfield Boulevard	AM	35.3	D+	35.4	D+	+0.007	+0.4
	PM	37.6	D+	38.1	D+	+0.011	+0.6
	SAT	30.3	C	30.7	C	+0.024	-0.2
14. Dunne Avenue/ NB US 101 Ramp	AM	15.5	B	15.5	B	+0.001	-0.0
	PM	12.8	B	12.7	B	+0.003	-0.1
	SAT	9.9	A	9.8	A	+0.005	-0.1
15. Tennant Avenue/NB US 101 Ramp	AM	25.5	C	26.7	C	+0.025	+1.6
	PM	22.0	C+	23.6	C	+0.068	+2.0
	SAT	19.9	B-	22.6	C+	+0.099	+3.2

Notes:
1 AM = Morning peak-hour, PM = Evening peak-hour, SAT = Saturday midday peak-hour.
2 Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections using methodology described in the *2000 Highway Capacity Manual*, with adjusted saturation flow rates to reflect Santa Clara County Conditions. For two-way stop controlled unsignalized intersections, total control delay for the worst movement/approach, expressed in seconds per vehicle, is presented. LOS calculations conducted using the TRAFFIX level of service analysis software package.
3 LOS = Level of service
4 Change in critical movement delay between Background and Project Conditions. A decrease in the critical delay indicates project trips were added to movements with low delays thus causing a decrease in the overall critical delay.
5 Change in the critical volume-to-capacity ratio (V/C) between Background and Project Conditions.
6 Intersection is analyzed as unsignalized under Background Conditions, and with a traffic signal and additional lanes under Project Conditions.
7 Intersection is analyzed as unsignalized under Background, and with additional lanes under Project Conditions.
Significant impacts are designated in **bold** type.

INTERSECTION IMPACT CRITERIA

The impacts of the project were evaluated by comparing the results of the level of service calculations under Project Conditions to the results under Background Conditions.

Signalized Intersections

For this analysis, traffic impacts at signalized intersections are defined to occur when the addition of project traffic causes:

1. Intersection operations at freeway ramp intersections to deteriorate from an acceptable level (LOS E or better) under Background Conditions to an unacceptable level (LOS F); or
2. Exacerbation of unacceptable operations at freeway ramp intersections by increasing the average critical delay by more than four seconds and increasing the volume-to-capacity (V/C) ratio by 0.01 or more at an intersection operating at LOS F under Background Conditions.
3. Intersection operations at non-freeway ramp intersections to deteriorate from an acceptable level (LOS D+ or better) under Background Conditions to an unacceptable level (LOS D, E, or LOS F); or
4. Exacerbation of unacceptable operations at non-freeway ramp intersections by increasing the average critical delay by more than four seconds and increasing the volume-to-capacity (V/C) ratio by 0.01 or more at an intersection operating at LOS D, E, or F under Background Conditions.
5. A decrease in the average critical delay and an increase in the V/C ratio of 0.01 or more for an intersection operating at an unacceptable level (LOS D, E, or F for non-freeway intersections and LOS F for freeway ramp intersections).

Based on the project impact criteria listed above, the proposed project would have a significant impact on the Dunne Avenue/Monterey Road intersection.

Unsignalized Intersections

For this analysis, traffic impacts at unsignalized intersections are defined to occur when the addition of project traffic causes:

1. Intersection operations to deteriorate from an acceptable level under Background Conditions (LOS D+ or better) to an unacceptable level (LOS D or worse); or
2. The exacerbation of operations at an unsignalized intersection already operating at an unacceptable level (LOS D or worse) under Background Conditions *and* the Caltrans Peak Hour Volume Warrant is met under Project Conditions.

Based on the project impact criteria listed above, the proposed project would have a significant impact on the Mission View Drive/Cochrane Road intersection.

INTERSECTION IMPACTS

The Dunne Avenue/Monterey Road intersection is projected to operate unacceptably during the PM peak hour under both Background and Project Conditions. Although the addition of project traffic causes a decrease in the average critical delay, the critical volume-to-capacity ratio increases by more than 0.01. The overall average critical delay decreases because the addition of project traffic changes the critical movements. Based on the criteria described above this is considered a ***significant impact***.

The Cochrane Road/Mission View Drive unsignalized intersection is expected to operate at LOS C, LOS B and LOS B during the AM, PM, and Saturday midday peak hours, respectively, under Background Conditions. The addition of project-generated traffic is expected to reduce intersection operations to an unacceptable level of service (LOS F) during the AM, PM, and Saturday midday peak hours. This constitutes a ***significant impact*** at the Mission View Drive/Cochrane Road unsignalized intersection.

INTERSECTION MITIGATION MEASURES

The results of the analysis indicate that the proposed project will have a significant impact on two of the fifteen study intersections. The intersection improvements identified to mitigate project impacts are discussed below and presented on Figure 11.

Dunne Avenue/Monterey Road

To mitigate the project impact at this intersection, the westbound right-turn lane would have to be restriped as a shared through/right-turn lane, and a northbound right-turn overlap phase would have to be installed. These modifications would improve the average delay to 38.6 seconds (LOS D+) during the PM peak hour. Based on preliminary field measurements these improvements will not likely require right-of-way acquisition to implement. This improvement would be required when 35 percent of the project has been constructed based on total PM peak hour trip generation.

The addition of the westbound shared through/right-turn lane requires two receiving lanes for some distance on the west leg of the intersection. Using Caltrans design standards, the length of the transition from two lanes to one lane would be approximately 200 feet. Based on the roadway width of the west leg, this improvement should be able to be accommodated within the existing right-of-way. In addition, the proposed mitigation to the westbound approach would require the elimination of the striped bike lane on this approach if no additional widening occurred. Currently, the bike lane does not continue across Monterey Road to the west, but the General Plan includes a future bike lane on Dunne Avenue on both sides of Monterey Road.

The northbound overlap phase improvement would require the elimination of westbound u-turns at the Monterey Road/Dunne Avenue intersection.

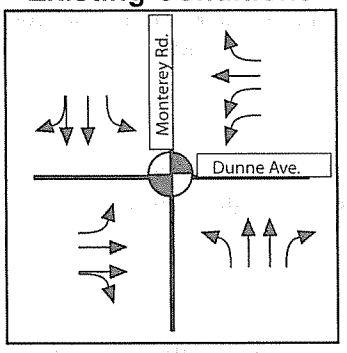
A sensitivity analysis was performed at this intersection to determine the effect that recently approved traffic calming measures on Monterey Road between Dunne Avenue and Main Street might have on this impact. The analysis found that the traffic calming measures being implemented on Monterey Road are not anticipated to substantially alter the existing travel patterns of vehicles and are designed to better manage traffic through the downtown area. Upon implementation of the improvements, approximately five percent of turning movement volumes are expected to divert to alternate routes such as Butterfield Boulevard. The results of this analysis show that the diversion would not substantially affect the operations of the Monterey Road/Dunne Avenue intersection. A recalculation of the intersection LOS with this diversion (and the mitigation of providing an overlap phase for the northbound right-turn movement) resulted in 40.6 seconds of average delay (LOS D), above the significance threshold (no more than 39.0 seconds of delay) which defines acceptable LOS D+. Since the increase in critical volume-to-capacity ratio would remain over 0.01, and the average critical delay decreases, the significant impact would still occur with diversion of traffic resulting from the traffic calming measures on Monterey Road.

Mission View Drive/Cochrane Road

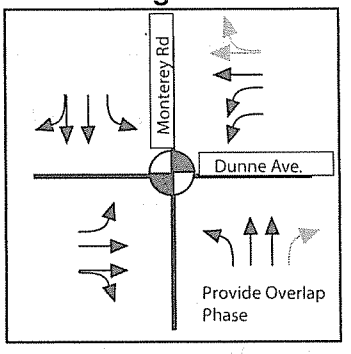
The intersection meets the minimum volume thresholds for Caltrans' peak-hour signal warrant (see worksheets in Appendix D) and operations are unacceptable. Therefore, a traffic signal at this intersection with protected left-turn phasing on all approaches is required to mitigate the impact. The City of Morgan Hill is

Monterey Road / Dunne Avenue

Existing Conditions

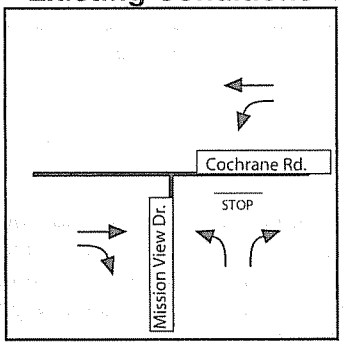


Configuration with Mitigation

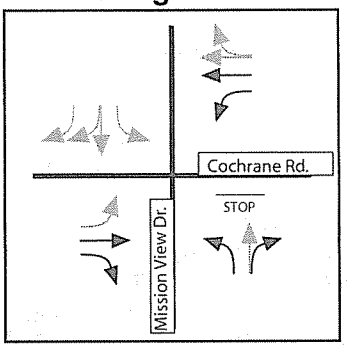


Cochrane Road / Mission View Drive

Existing Conditions



Configuration with Mitigation



N
Not to Scale

Key:
= Mitigation Measures
= Signalized Intersection
STOP = Stop Sign

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PROPOSED MITIGATION MEASURES
Figure 11

requiring the signalization of this intersection. With the following roadway geometry and the required traffic signal, the intersection is expected to operate at LOS C or better during all peak hours.

To mitigate project impacts at this intersection, it is recommended that the intersection be reconfigured to include the following geometry:

- The northbound approach should include one left-turn lane and one shared through/right-turn lane.
- The westbound approach should include one left-turn lane, one through lane, and one shared through/right-turn lane.
- The southbound approach should include one left-turn lane, one shared through/right-turn lane, and one right-turn lane.
- The eastbound approach should include one left-turn lane, one through lane, and one right-turn lane.

The widening of Cochrane Road in front of the project frontage to four lanes will result in providing two receiving lanes on the west leg of the Cochrane Road/Mission View Drive intersection. To provide an adequate transition across the intersection, the westbound approach should be widened for at least 150 feet plus transition to accommodate the through lane and shared through/right-turn lane noted above.

FREEWAY SEGMENT ANALYSIS

According to CMP guidelines, freeway segments to which a proposed development will add trips equal to or greater than one percent of the freeway segment's capacity must be evaluated. Segments of US 101 were reviewed during the AM and PM peak hours to determine if a significant amount of project traffic would be added to these freeway segments[1]. Capacities of 2,300 vehicles per hour per lane (vphpl) were used for the mixed flow lanes. Table 9 presents the results of the freeway segment analysis.

The CMP defines a project as having a significant impact on a freeway segment if:

1. The addition of project traffic causes the operating level of a freeway segment to deteriorate from LOS E or better under Existing Conditions to LOS F; *or*
2. The number of new trips added by a proposed project to a segment already operating at LOS F under Existing Conditions is more than one percent of the freeway segment capacity.

The results of the freeway level of service analysis indicate that the proposed project would add 87 AM peak hour trips to the segment of northbound US 101 between Tenant Avenue and Dunne Avenue. One percent of the hourly capacity of this segment (6,900 vehicles) is 69 vehicles. The exceedance of the 69 vehicle threshold by 18 vehicles results in a significant impact on this segment during the AM peak hour.

[1] The CMP guidelines require the analysis of freeway segments during the AM and PM peak hours, but not the Saturday peak hour, when the peak trip generation for the project occurs. To determine if additional analysis was necessary, weekday and weekend traffic volumes were obtained from Caltrans for comparison purposes. The results show that weekend peak hour volumes are approximately 25% less than the weekday peak hour on US 101 in the vicinity of the project site. Therefore, an analysis of the freeway segments was not conducted during the Saturday peak hour.

TABLE 9

US 101 FREEWAY SEGMENT ANALYSIS

Segment	Direction	Capacity[2] (Vehicles)	Peak Hour	Existing Conditions[1]				Project Conditions			
				Avg. Speed[3]	Volume	Density[4]	LOS[5]	Project Trips	Density[4]	LOS[5]	Percent Impact[6]
San Martin to Tennant	NB	6,900	AM	45	6,480	48	E	50	48	E	0.72
			PM	67	2,810	14	B	139	15	B	2.01
Tennant to Dunne	NB	6,900	**AM**	**22**	**5,210**	**79**	**F**	**87**	**80**	**F**	**1.26**
			PM	67	3,620	18	B	242	19	C	3.51
Dunne to Cochrane	NB	6,900	AM	48	6,480	45	D	105	46	D	1.52
			PM	66	4,160	21	C	292	22	C	4.23
Cochrane to Burnett	NB	6,900	AM	64	6,140	32	D	27	32	D	0.43
			PM	66	5,540	28	D	127	29	D	2.04
Tennant to San Martin	SB	6,900	AM	67	2,410	12	B	30	12	B	0.43
			PM	66	4,360	22	C	141	23	C	2.04
Dunne to Tennant	SB	6,900	AM	67	2,810	14	B	52	14	B	0.75
			PM	65	5,850	30	D	246	31	D	3.57
Cochrane to Dunne	SB	6,900	AM	67	3,620	18	B	63	18	C	0.91
			PM	63	6,430	34	D	297	36	D	4.30
Burnett to Cochrane	SB	6,900	AM	67	3,220	16	B	45	16	B	0.72
			PM	64	6,140	32	D	125	33	D	2.01

Notes:

1 Density based on volume from VTA 2004 CMP Monitoring Data .

2 In vehicles per hour per lane (VPH).

3 In miles per hour (MPH).

4 In vehicles per mile per lane (vpmpl).

5 LOS = Level of Service. LOS based on density.

6 Percent impact determined by dividing the number of project trips by the freeway segment's capacity.

7 NB = Northbound, SB = Southbound

Significant freeway impacts are indicated in **Bold** type.

FREEWAY SEGMENT MITIGATION

The recommended mitigation for project impacts to the freeway segments is the project's participation in the Countywide Deficiency Plan (CDP). According the CMP TIA guidelines, pending adoption of the CDP, if a project causes a transportation impact that cannot be reduced to a less-than-significant level, the Lead Agency (the City of Morgan Hill) must implement, or require the project's sponsor to implement, the "Immediate Actions" list in Appendix D of the Draft Countywide Deficiency Plan is part of the project's approval (see Appendix H of this report). This list is not specific in identifying measures, but a number of these items on the list are included in the proposed project. The following are some of the items that will be included: bicycle racks, pedestrian facilities (sidewalks and crosswalks), bus stop improvements,

These actions encourage the use of non-automobile modes and help to maximize the efficiency of the existing transportation system. However, these actions are not expected to reduce the project impact to less than significant level (i.e,. would not reduce the project's contribution to the freeway segment to be less than 1 percent of existing peak volume). Therefore, the impact to segment of northbound US 101 between Tennant Avenue and Dunne Avenue during the AM peak hour would be **significant and unavoidable**.

SITE ACCESS AND ON-SITE CIRCULATION

Figure 2 presents the preliminary site plan for the proposed project. As indicated at the beginning of this chapter, access to the project site would be provided via two driveways on Cochrane Road and at six locations on the future Mission View Drive extension (north of Cochrane Road).

The southernmost driveway of the six driveways on Mission View Drive should be designated as a right-turn in and out only driveway due to its close proximity to the Cochrane Road/Mission View Drive intersection (i.e. signs should be posted prohibiting left-turn movements into or out of this driveway). If left-turns into the site are allowed at this driveway, there is the potential for vehicles to conflict with vehicles queuing on the north leg of the Cochrane Road/Mission View Drive intersection. All remaining driveways on Mission View Drive should provide turn pockets for left-turning vehicles into the site. These pockets may not be necessary until Mission View Drive is connected via Burnett Avenue to the north over US 101. However, adequate right-of-way should be provided to accommodate future turn pockets.

We recommend that the two driveways directly behind the movie theater on Mission View Drive be eliminated and a circulation aisle be provided behind the movie theater to reduce the number of potential vehicle conflicts with pedestrians. The remaining four intersections would be able to accommodate the volume of project-generated traffic.

The circulation aisles shown provide adequate access to all buildings/pads and no dead-end aisles are provided. Ninety-degree parking is provided on most aisles with stalls generally on both sides.

The main north-south circulation aisle that extends north from DePaul Drive provides adequate access to the various uses within the project site. This main circulation aisle is a long straight section that may encourage speeding without traffic control devices. It is recommended that the intersections along this aisle be modified to include traffic control devices that would discourage speeding and provide improve pedestrian crossing. Stop signs should be installed on the side streets of the circulation aisle at on-site Intersection 1 (designated on Figure 2). On-site Intersection 2 should provide either a raised intersection with stop signs on the side street approaches or a four-way stop. On-site Intersection 3 should include a stop sign on all four approaches. The median shown on the preliminary site plan along this aisle from Cochrane Road north past intersection one is recommended to avoid congestion and to provide adequate queuing distance.

We recommend that the covered loading area located at the southwest corner of the "Major 8" building be relocated away from intersection number four (designated on Figure 2). The proximity of the loading area to this intersection could create driver confusion. It should be located far enough away that the approach lane at intersection number four has merged into one lane.

Turning templates should be applied to the final site plan to ensure that all large vehicles accessing the project site can negotiate all required turning movements. The local fire department should also review the final site plan to ensure that adequate emergency access is provided.

Cochrane Road Cross-Section

The mitigated lane configurations at the Cochrane Road/DePaul Drive and Cochrane Road/Mission View Drive intersections require that two through lanes in each direction be provided on Cochrane Road adjacent to the project site. It should be noted that through vehicles in the eastbound shared through/right-turn lane at DePaul Drive would be forced into making an eastbound right-turn lane at Mission View Drive. The widening of Cochrane Road in front of the project frontage to four lanes will result in providing two receiving lanes on the west leg of the Cochrane Road/Mission View Drive intersection. To provide an adequate transition across the intersection, the westbound approach should be widened for at least 150 feet plus transition to accommodate the through lane and shared through/right-turn lane noted above.

.With the recommended lane improvements and traffic signal at Cochrane Road/Mission View Drive, only one eastbound left-turn lane would be provided to serve approximately 470 vehicles during the Saturday midday peak-hour. According to the queuing analysis calculations (see Appendix E), a queue of 10 vehicles is estimated. This translates into a queue of 250 feet assuming an average spacing of 25 feet per vehicle. The westbound left-turn movement at the Cochrane Road/DePaul Drive intersection during the Saturday peak hour is projected to be less than 10 vehicles per hour. This would result in very short queue lengths (less than two vehicles). Based on queuing for the westbound left-turn at DePaul Drive, the eastbound left-turn at Mission View Drive could accommodate the 250 feet of storage length.

The turn pockets at the Cochrane Road/DePaul Drive intersection were analyzed to estimate the lengths needed to accommodate Project Conditions traffic volumes. The 95th percentile queue was used in determining these estimates. According to the queuing analysis calculations (see Appendix E), a queue of 10 vehicles for each lane is estimated for the eastbound left-turn lane into the site. This translates into a queue of 250 feet assuming an average spacing of 25 feet per vehicle. The southbound leg of the intersection (on the project site), including left and right-turning vehicles is projected to have a queue of 7 vehicles. This translates into a queue of 175 feet. The volume in the westbound left-turn at Cochrane Road and DePaul Drive has less than ten vehicles per hour under Project Conditions. The estimated queue for this movement is one vehicle length or 25 feet under Project Conditions. This pocket length should be designed in such a way that it could be extended in the future when the Murphy Avenue extension is connected to DePaul Drive to the south and Mission View Drive is also connected to Burnett Avenue to the north.

PARKING

The number of parking spaces provided on the preliminary site plan is 3,025 stalls. (This total applies to both the retail and fuel station alternatives for Pad 2, which both show 12 spaces.) It should also be noted that that the following analysis of parking supply is based on the preliminary project site plan dated March 10, 2005, which shows a total retail floor area of 594,050 s.f. of shopping center space, not including cinema. The land use for Pad 2 is assumed to be the 6,000 s.f. of retail shown on the site plan, since this represents a worst-case scenario for parking demand relative to the optional fuel station planned for Pad 2.

The City of Morgan Hill parking code requirements designate parking supply ratios for various land uses. The proposed project includes a combination of commercial land uses, including retail, restaurant (both sit-down and fast food), and movie theater. Although the code includes parking supply ratios for all of these independent uses, the proportions of retail and restaurant space to be developed has not been determined. Since the code does not include a shopping center category combining both uses, City staff determined that it would be appropriate to use the Institute of Traffic Engineers (ITE) parking supply rate for "shopping center," as provided for in the Municipal Code in situations where the code does not include a particular land use category. The parking supply required for the project was determined through application of the Municipal Code parking requirements for the various proposed land uses. The calculation of parking required under the City code, with the ITE rate shopping center rate used for retail and restaurant space, is presented below. A

second methodology for calculating parking supply, using only ITE parking rates for the same land use categories, was also applied. This methodology is somewhat more refined since it incorporates the fact that different land uses have different peak times of use, such that a certain number of parking spaces that would normally be required through application of the City requirements would actually function as shared parking spaces. The parking calculation under this methodology is presented subsequently.

It is important to note at the outset that although the ITE parking supply rate for shopping centers includes some allowance for restaurants, the specific ratio of restaurants included in the ITE rate is not known, but is believed to be minor. Since restaurants (both sit-down and fast food) generate far greater parking demand than retail uses, the parking calculation under both methodologies discussed below would tend to underestimate actual parking demand for the project if a substantial number of restaurants are ultimately proposed. This potential problem, and the means for addressing it, are discussed at the end of the parking discussion.

Required Supply Based on City Code

As discussed above, the ITE peak parking rate for the 'shopping center' was used to calculate the city parking requirement for combined retail and restaurant space. The peak rate is 3.21 spaces per 1,000 s.f. of space, which was then increased by ten percent to account for a circulation factor (i.e., to allow vehicles to park without having to circulate through the project site and wait for a space to become available). This results in a required parking rate of 3.53 spaces per 1,000 s.f, or 1 space/283 s.f. (It should be noted that municipal parking rates typically incorporate a similar 10 percent circulation factor within their required parking rates, although this is usually not stated.)

For movie theatre space, the City of Morgan Hill code requires 1 space for every 3.5 seats or 1 space per 32 s.f. of usable seating area (whichever is greater). The rate of 1 space per 3.5 seats was used in this analysis to estimate the movie theater parking supply because the exact size of usable movie theater space is unknown at this time.

These rates result in a required supply of 2,956 spaces (i.e., 594,050 s.f. retail space at 1 space/283=2,099 spaces; 3,000 seats at 1 space/3.5 seats=857). Therefore, the proposed parking supply of 3,025 spaces shown on the preliminary site plan exceeds the supply requirement indicated under this methodology by 69 spaces.

Shared Parking Analysis

Although City parking codes are typically designed for peak or near-peak demand conditions, the actual time period of peak parking demand for the land uses within the project will occur at different times. This can produce a situation where an oversupply of parking is created. By recognizing when the peak periods for the various land uses occur, one land use could actually utilize the temporary surplus of parking from a neighboring use during non-peak demand times for that neighboring use. Parking supply requirements can be calculated to reflect such "shared parking" conditions, and thereby reduce overall parking requirements.

The Institute of Transportation Engineers' (ITE) *Parking Generation* (3rd Edition) provides peak parking demand rates for various land uses. It indicates when that peak parking demand (i.e., 100 percent) occurs, and for other hours of the day it also indicates the percent of peak parking demand that would occur at those times. By reviewing the peak demand rates for all proposed land uses, the peak time of the aggregate peak parking demand can be determined for all proposed land uses. In the case of this project, the peak hour for aggregate parking demand is 1:00 PM on a weekend day when 100 percent peak demand for the land uses occurs at that hour. The overall project parking requirement was calculated by taking the peak demand rate for each land use and multiplying by the percentage of peak use that occurs at 1 PM on a weekend day for

that land use. The overall "shared parking" requirement for peak weekday conditions were also calculated. These calculations are provided in Appendix F.

The shared parking analysis for the weekend day shows that the projected peak parking demand would be 2,750 spaces at 1:00 PM. This overall demand includes a ten percent circulation factor, as was applied under the first methodology above. The proposed supply of 3,025 spaces shown on the preliminary project site plan would exceed the peak weekend parking requirement by 275 spaces indicated through application of this methodology.

The results of the weekday shared parking analysis show that the expected peak demand would be 1,712 spaces at 1:00 PM. This demand also includes a ten percent circulation factor. Therefore, the proposed supply of 3,025 spaces indicated on the project site plan would meet the peak weekday parking requirement of 1,712 spaces indicated under this methodology.

A further calculation was conducted to determine the amount of restaurant space that could be allowed with the proposed supply (3,025 spaces). Using the shared parking methodology described above, it was determined that 25,000 s.f. of sit-down restaurant space could be accommodated without resulting in an overall parking deficiency for the project. Since sit-down restaurant space has a higher parking demand (13.5 spaces/1,000 s.f.) than fast food space (9.5 spaces/1,000 s.f.) a mix of the two restaurant types would allow for a slightly higher total. Therefore, if the proportion of sit-down to fast-food restaurant floor area was roughly 65% to 35%, it is estimated that approximately 28,000 s.f. of restaurant space would be able to be accommodated in the project site with the proposed supply of 3,025 parking spaces without resulting in an overall parking deficiency for the project during the peak weekend day. It should be noted that this calculation includes the parking demand for a 3,000 seat theater. For comparison purposes, the calculation was performed assuming a 2,500 seat theater. Based on the same rough proportion of sit-down to fast-food restaurants, it is estimated that approximately 8,000 additional s.f. of restaurant space (or approximately 36,000 s.f. total) could be accommodated if the theater size were reduced by 500 seats.

Impact Assessment

Potential Parking Impacts

As noted at the outset of this discussion, both of the above methodologies could underestimate actual parking demand for the project. This is because both methods use the ITE shopping center rates to encompass both retail and restaurant uses. This is a valid approach since the ITE shopping center rate does include some provision for restaurants, although the proportion of restaurants assumed in the rate is unknown. It is also a necessary approach since the proportion of restaurant space to be included in the project has not yet been determined. However, it is reasonable to conclude that the proportion of restaurants contemplated in the ITE shopping center rate is minor given that the parking demand rates for all types of restaurants are substantially higher than the shopping center rate. As such, the above calculations of parking demand would only be valid if the actual amount of restaurant space ultimately proposed is also minor. If a substantial proportion of the project is occupied by restaurants, the project could potentially face a parking deficiency unless the parking supply is increased.

Environmental documents prepared under CEQA, including supporting technical reports on traffic and parking impacts, are to assume reasonable worst-case conditions in the absence of specific project information. In the case of the proposed project, there is a likelihood that a parking deficiency of undetermined magnitude will occur if more than a minor amount of restaurant space is included in the project. This represents a potentially significant impact of the proposed project.

Mitigation Measure

The following mitigation measure is identified to ensure that the overall number of parking spaces included in the proposed project will meet the aggregate parking demand of the various land uses proposed within the project.

At the time of subsequent discretionary approval (e.g., use permit, design review) for each individual restaurant building pad, parcel, or other unit of incremental development, the parking supply provided for each such development unit shall meet the peak parking demand for the specific type of restaurant proposed (e.g., sit-down or fast food), as determined through either the applicable City parking requirement, or through application of the ITE shared parking rates for 1 PM on a weekend day (plus 10 percent). As a guide to the approximate maximum floor area of restaurant that can be constructed without resulting in a parking deficiency for the project, the maximum floor area can range from 25,000 square feet (assuming 100 percent sit-down restaurant) to 41,000 square feet (assuming 100 percent fast-food restaurant), although the actual maximum will fall between these numbers if the project ultimately includes a mix of the two restaurant types. (These maximum figures assume floor areas for all other project uses will remain as proposed on the May 2, 2005 project site plan.) After the center is 75 percent built-out on the basis of floor area (assuming the cinemas have been completed), the calculation of parking requirements for new restaurant uses may be adjusted based on the results of physical parking surveys at the center conducted during the peak usage period by a qualified transportation consultant. If the cinemas have not been completed upon 75 percent project completion, then surveys cannot be conducted until 85 percent of project is in operation.

PEDESTRIAN, BIKE, AND TRANSIT IMPACTS

The effect of the project on transit, bicycle and pedestrian facilities was evaluated in terms of conflicts with existing or planned facilities and the potential for creation of hazardous conditions for bicyclists or pedestrians.

Pedestrian Facilities

Near the project site, sidewalks are provided on both sides of Cochrane Road across its interchange with US 101. Sidewalks are also provided on the south side of Cochrane Road east of Mission View Drive and on the east side of Mission View Road south of Cochrane Road. The site plan shows that a continuous sidewalk will be constructed along the entire frontage of Cochrane Road and Mission View Drive. Designated pedestrian paths are also shown linking the street sidewalks to all of the on-site buildings.

Pedestrian crosswalks should be provided on all four legs of the Cochrane Road/Mission View Drive intersection. The operation of double southbound right-turn lanes at the Cochrane Road/DePaul Drive intersection is not conducive to pedestrian travel across the west leg because of limited sight distance. A separate pedestrian phase, which degrades overall intersection operations, would be required to cross this leg. Thus, pedestrian crosswalks are recommended on the north, east, and south legs of the intersection. Assuming all of these facilities presented, no pedestrian impacts are anticipated.

Bicycle Facilities

Existing bicycle lanes are provided on Cochrane Road between Monterey Road and US 101. Additional bicycle facilities are provided on Main Avenue, Dunne Avenue, Tennant Avenue, Butterfield Boulevard, and Hale Avenue.

The City of Morgan Hill *General Plan* (July 2001) identifies planned bicycle lanes on Cochrane Road (between US 101 and Mission View Drive), DePaul Drive, and Mission View Drive. A bicycle route is proposed on Cochrane Road, east of Mission View Drive. As part of frontage improvements, the proposed

project should provide adequate width to accommodate the planned bikeways as identified in the *General Plan*.

The project sponsor should provide bicycle racks or lockers to accommodate bicycle travel. Bicycle parking should be located in high visibility areas of the project in order to encourage bicycle travel and discourage theft and vandalism.

The mitigation measure for the Dunne Avenue/Monterey Road intersection impact calls for the elimination of a portion of the existing westbound bike lane on Dunne Avenue to allow restriping of the separate right-turn lane as a shared through/right-turn lane. Additional widening at this intersection would be required to provide a separate bike lane once bike lanes are provided west of Monterey Road.

Transit Facilities

As noted in Chapter Two, VTA Bus Route 16 operates along Cochrane Road and Mission View Drive and a bus stop is provided on Mission View Drive near the Cochrane Road intersection. This route provides service between Burnett Avenue and the Morgan Hill Civic Center and operates on Cochrane Road and Mission View Drive. A bus stop is provided on Mission View Drive near Cochrane Road.

VTA was contacted to obtain a load factor for Bus Route 16. Bus Route 16 has a load factor (based on 38-seat bus) of 0.08 and 0.11 for the northbound and southbound directions, respectively. Therefore, the existing transit route has sufficient capacity to accommodate transit riders generated by the proposed project. The existing bus stop on Mission View Drive south of Cochrane Road is not well situated to serve the project site. The project should include a new bus stop along the site frontage, including a bus turnout as well as transit amenities such as a shelter and benches.